Open Workshops

Industrial Ecology and Lean Manufacturing: An Overview and Discussion about What They Mean for Our Work

Design for the Environment (DfE) Program
U.S. Federal Government
Environmental Protection Agency

What is Design for the Environment?
DfE is a recognized approach companies use to consider environmental impacts in business decisions. Manufacturers are increasingly thinking in terms of "design for" qualities or traits in their products and processes. In the environmental field, views on risk management are shifting to approaches that promote reducing risks to human health and the environment through pollution prevention or source reduction instead of through pollution control. The EPA's DfE Program works directly with industry sectors to incorporate environmental considerations into traditional business factors of cost and performance. EPA has formed voluntary partnerships to design products, processes, technologies and management systems that are more protective of human health and the environment and often provide these industries with a competitive edge.

EPA's DfE Program:
DfE is a testing ground for new approaches to risk reduction through pollution prevention. By balancing business needs and environmental concerns, the DfE Program is serving as a catalyst for lasting change. DfE's approach is grounded in comparing the risks, performance and costs of alternative technologies or processes. Rather than rely on end-of-pipe controls, DfE encourages pollution prevention, or front-end innovations, through the redesign of formulations, technologies, and management processes. DfE can help an industry comply with regulations through cleaner technologies and safer chemicals. To move an industry beyond compliance, a DfE project looks at cross-media impacts, energy and resource use, and the risks from regulated and unregulated hazardous chemicals.

Partnerships:
DfE partners with an entire industry sector, usually through industry leaders and trade association representatives, to conduct an assessment of current baseline technologies and viable alternatives. DfE assessments are disseminated throughout the industry, so businesses can make better informed decisions that reduce environmental impacts and even boost a company's bottom line. A DfE partnership takes on one or more of the following approaches:

- Cleaner Technologies Substitutes Assessment
- Best Practices
- Integrated Environmental Management Systems
- Formulator Approach
- Greening the Supply Chain
- Life Cycle Assessment

Current DfE projects include the following:

- Printing Projects (screen printing, lithography, flexography)
- Industrial/ Institutional Cleaning Formulations Project
- Adhesives in Foam Furniture & Sleep Products Industries
- DfE Integrated Environmental Management System (IEMS)
- Garment & textile Care Program
- Auto Refinishing Project
- Computer Display Project
- Printed Wiring Board Project

Key Findings:

- The DfE Program brings environmental leadership to over 2 million workers at over 170,000 facilities.
- The DfE Program is unique in its ability to assess the full range of hazards and comparative risks for industrial processes.
- DfE has achieved significant reductions in environmental impacts including energy and water savings, as well as reduced chemical risks resulting from used chemicals such as methylene chloride, perchloroethylene, formaldehyde, diisocyanates, mercury and lead.
- DfE partnerships have evaluated over 700 chemicals traditionally used by some of the nation's most important industrial sectors.
- One-third to one-half of the chemicals evaluated by DfE were found to pose a potentially significant threat to human health or the environment.

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